Humidity Measurement Procedures

Note: If you are a GLOBE School you may want to use the GLOBE Relative Humidity Protocol (pdf) and GLOBE Atmosphere Investigation Integrated 1-Day Data Sheet (pdf). Even if you are not a GLOBE school the Relative Humidity Protocol provides excellent background information to understand the importance of relative humidity in weather measurements.

Purpose: You will record relative humidity at least once a day and at intervals during the day. Maintaining an accurate record of the relative humidity during the day will allow you to compare humidity variations with temperature and with events like snowstorms and the formation of particular snowflake types. A graph of humidity through the year is a valuable way to compare climates from region to region.

Materials: Measurement of relative humidity may be made using a sling psychrometer or a digital hygrometer. Instructions will be different for each instrument.

- Most Digital Hygrometers should be stored in a dry location when not in use. Persistent rain or fog may damage the instrument if it is outside. Please check instructions that come with the instrument.
- Sling Psychrometer should be checked to make certain that the distilled water reservoir is filled.

Procedure:

1. All weather data should be recorded at the same time at least once every day. It is ideal to record weather data about every hour – and more frequently during snowstorms.
2. Record the time and date on the Weather Watch Field Data Sheet.
3. For Digital Hygrometer
    - Place hygrometer in a sheltered location outside 30 minutes prior to taking the measurement. Do not leave outside unless instructed to do so.
    - After 30 minutes read and record the relative humidity on the Weather Watch Field Data Sheet.
    - Record the air temperature. (Remember that you should be recording all weather data at the same time.)
    - Return the hygrometer to a dry location in the classroom unless instructed to leave outside.
4. For Sling Psychrometer

- Stand in the shade if possible. Otherwise stand with your back to the Sun and shade the psychrometer with your body. Keep the instrument as far from your body as possible and do not touch or breathe on the thermometers to keep body heat from affecting readings .
- Check to make sure there is distilled water in the reservoir. The temperature of the water should be at approximately air temperature. For example, don't fill reservoir with cold tap water just before making measurements.
- Sling the psychrometer around for 20 seconds and read (and remember) the wet bulb temperature.
- Repeat until the wet bulb temperature does not change.
- Immediately read and record the temperature of both thermometers to the nearest 0.5°C on the Weather Watch Field Data Sheet. Read the wet bulb first.
- Determine the relative humidity using a psychrometer chart or the scale found on some psychrometers.
- Record the relative humidity on the Weather Watch Field Data Sheet.

5. If your school is a registered Winter's Story Weather Station, return to the classroom and submit Weather Watch data to your site.